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" *O fortunatos nimium sua si bona norint*
" *Agricolas.*" . . . . VIRG.

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AGRICULTURE.

[*Communicated for the American Farmer.*]

ADDRESS,

Delivered to the " FARMERS' SOCIETY" of Fornwell District, S. Carolina, by Dr. JOHN S. BELLINGER. President thereof

Who remarks on the excellence of the Pine Lands of that District; the general importance of Draining; the modes of cultivating Cotton and Rice; the value of Pumpkins as food for horses; the advantages of Drill Culture to Winter Grain; the early maturity of Sweet Potatoes, raised from whole roots; the best times to sow different crops; the importance of selecting the best seed; the expediency of cultivating Orchards; the practicability of making good Domestic Wine; the usefulness of Cultivated Grasses, especially the Guinea Grass; the benefits of improving the breeds of Live Stock; the effects of different Manures and means of encreasing them; the propriety of Deep ploughing, and value of fine-tilth; the great excellence of Small Ploughs and particularly the Shovel plough; the fitness of Oxen and Mules, to supersede the draught horse, and the many blessings which flow from the establishment of Agricultural Societies.

Gentlemen—

I make you no apology, for the many inaccuracies which I am fully sensible will be found in the few observations I have to offer to your consideration, upon the important subject, of our attempt to improve the Agriculture of our district; in compliance with the expressed wish of my friends at the organization of our Society in August last: because, I hope you will receive them as a few hints thrown out to excite your attention; and as an earnest of my determination, to promote the objects of our association, to the utmost of my ability. The progress of the art of Agriculture has so steadily advanced, not only in Europe, but in our own country, by the formation of Agricultural Associations, that it appears to be almost useless to say much upon their utility, as it would be by long arguments to prove known truths in any branch of science. I shall therefore, confine myself to a few remarks which apply peculiarly to our district. Until the introduction of Cotton as a staple of our state, our soil was undervalued; not only by the farmers of other districts, but too much so by ourselves. We are situated, as it were, in the upper part of the low country; and hence, our lands were considered as adapted only, to the raising of stock, and the support of a small population. Within the last twenty years, our district has advanced much in wealth, population and civilization; and those lands, which in 1800, were only valued for their timber and the raising of stock, now send as much cotton to market for the number of cultivators, as most districts of our state.

Because most of the first quality lands in the low country, consisted of oak and hickory, it was erroneously supposed that all lands having a growth of pine, were not calculated to make a due return for the labours of the husbandman. But much of our pine lands, are not only as productive, but consist of as good soils for corn and cotton, as the oak and hickory lands of those districts. Much of our best lands, however, are in a state of nature. I allude to our swamps and low grounds, which from the few trials made to ascertain their fertility, we are fully assured only require the art and industry of man, to make them as productive as the rich swamps in other parts of the state. I need not inform you that our cotton ranks among the first at market, of a good quality, and I do not overrate the value of our lands, when I assert my belief, that industrious farmers can make as much interest upon the capital employed in this, as in any other district in South Carolina. I shall not attempt to offer you any theoretical opinions relative to the food of plants, the nature of soils, or the constituent parts of manures which are used for the improvement of lands; concluding that in our state of agricultural improvement, a few practical observations, connected with the husbandry of our district, will be of more utility; for should my opinions be erroneous, they may ultimately advance the objects of our association, by inducing some of you, more qualified from experience, to correct them.

Although most farmers appear sensible of the propriety of *draining their fields*, yet the last unusually wet season must have forcibly convinced the majority of us, that this part of the preparation of our lands for cultivation is too much neglected. Indeed, the injurious effects of too much moisture, even upon lands that apparently do not require draining, is so manifest, that was it the custom of farmers, to devote a much greater period of every spring, to the cleaning out of old drains, and forming more new ones than is generally done, each crop would fully reward them for this extra work.

To produce good crops, with the least labour and least injury to the soil, appears to be the great object of every cultivator. In the culture of cotton, as far as my experience goes, I am inclined to think these are certainly easier obtained, by deriving the most aid from the hoe, and the formation of large beds, and they made as early in the winter as possible—this prevents the growth of grass in the early part of the season, and then by the union of the plough and hoe, the crop is made with less labour than if the same be commenced with small beds. The best parts of the soil being covered early in the winter, the inferior particles are left to be benefited in the latter part of the season, by its exposure to the atmosphere, and the beneficial effects of frost and snow, and during the summer culture, the good soil is protected from the injurious effects of the heat of the sun and beating rains.

In the culture of that valuable grain, Indian corn, so much attention has been paid both by northern and southern planters, that it would seem as tho' the subject was exhausted, and that we should at this period have united in some generally approved mode of culture—So far, however, from this being the case, we find the best farmers of the same state, differ as widely in their practice, as our agricultural writers do in their theoretical ideas upon this subject.

Having for four years adopted a plan different from my neighbours, with a great part of my corn crop, and this season, with the whole, with an increased opinion of its utility, I think I can state it to you with some share of confidence.

It appears proper, briefly to state the method I followed for the first seven years since I became a planter in this district, and the usual one. Although some of the best farmers break up their fields in the winter or spring, the majority (and myself among the number) having to settle a new place in part, only lay off their fields in the spring with three furrows in one direction, then cross the same with one furrow, at the intended distance to plant the corn, and as soon as the corn is in a fit state to commence its culture, the whole of the intervals are completely ploughed up at every ploughing, and all who can, give their corn a slight hoeing when young, and another when they lay by their crop. In preparing my field for corn, I only run one furrow each way, at the distance intended to plant the same. As soon as the corn is fit to plough, one furrow is run each side with a small plough, and, in ten or fourteen days, the field receives a similar ploughing in the other direction. These two first ploughings are made with a shovel plough, that throws the dirt equally on both sides, so as not to injure the young corn by too much earth. This mode of culture is continued till the time to plant peas; when a middle furrow is run for the first time to receive them. When the corn is waist high, the number of furrows is increased—and when the corn tassels, it receives a full and last ploughing, and the alleys are completely broken up for the first time only.—When the corn is fit for thinning, it receives a light hoeing, and after the last ploughing, it receives a laying by with the hoe. I cannot assert that this plan would answer in highly manured lands, where the growth of grass might be too much, or upon very stiff clays, which require a greater degree of pulverization, and as I do not wish to take up much time in giving any theoretical opinions, which appear in favour of this plan, I shall only add that I have made more per acre, in each of the 5 years with this mode of culture, than I made in any of the

7 years with the old plan; and that, notwithstanding the rainy season we have had, I never made a crop of corn with so little labour and so little grass: which this mode of cultivation does not produce to any great degree, till the corn crop be made. I must add, that I wish it borne in mind, that, as the corn grows, the space of earth broken up is to be encreased; and that when the plant will require all the strength of the soil, the whole field is to be well broken up—and thus managed it will be much cleaner of grass than most farmers have their fields, which have been altogether ploughed up at each of the previous ploughings. It is fully agreed among us, that an additional hoeing is necessary to obtain a full crop of peas unless upon new lands. For performing the last ploughing with the greatest benefit, I prefer having the corn wider one way than another; so that this last ploughing will not be injurious to the blades. The peas and corn, when laid by are upon rows that run north and south, which appear to give more of the influence of the sun to perfect the pea crop, than if they were planted so as be more shaded by the growing corn.

From our distance to the market, it is probable that many years will pass away, ere *rice* will be cultivated for sale, although we have large bodies of swamp lands, which from the trials made with them, would be productive in that valuable grain. It is rather a singular circumstance, that from the experience of many of us, most farmers are inclined to the opinion, that with the usual seasons, our high lands produce more of rice than of corn, although it requires more culture and is supposed to exhaust the land more than any other grain. The *gold-seed* rice best suits our high lands, as that kind of seed is supposed to stand droughts more than the white rice. Having understood that a portion of valuable rice lands in one part of our state, has been reduced so low by long culture, or other causes, as not to be drained in a proper manner at the season for planting; I am induced to mention a well attested fact, that has occurred in our district this season. Mr Snelling, one of our farmers, having prepared a pond for rice, and in consequence of the rains it became so full of water, that he expected to lose all his labour, which induced him to wade knee deep in the pond, and sow the same broad cast with rice—it came up through the water—never was cultivated—and produced a moderate crop. Another pond, which Mr. Snelling had planted in rice last year came up with volunteer rice—was not cultivated—and produced a moderate crop also. This volunteer rice would afford a subject to the philosophical farmer, of much interest to solve. It is always *red*, although the seed of the same crop when planted, will be *white*, if the original seed was pure. But the same kind of seed, from remaining in the ground, comes up the next season and produces *red rice*. It would seem that the crop of Mr. Snelling deserves some attention from the rice planters; and that it fully establishes the opinions of General Thomas Pinckney, relative to this grain,*

* "After the meeting of our Society, I learned from an authentic source, that Mr. Hightower, another farmer of our district, has this season made a *good* crop of rice, from a pond which he sowed broad-cast in the water and never cultivated it."

As a nourishing food for horses, coming in at a time of the year when they appear to be, not only nutritious, but well calculated to keep them healthy and perhaps prevent many diseases connected with these useful animals—the *Pumpkin*, appears fully to remunerate us for their culture, and from their covering so well the soil, it is said they injure the land less than most other products of the field. Having planted a field of them 6 or 7 years ago, 10 feet square, their culture first suggested to me, the idea of not ploughing up *all* the intervals of the land in the early state of some of our crops; and this crop was as good as the land could produce, had I given it *double* the culture it received.

Although our lands appear best calculated for cotton and corn, yet the various crops of *winter grain*, when cultivated with moderate attention, fully answer all our purposes. With respect to these crops, it would seem if we were to plant one third less in continued rows, and give the crop a tolerable cultivation with the plough; we should be well rewarded for the after culture, not only by the increased crop, but the growth of crab-grass and crow-foot, both of which grasses, as a summer pasture, appear decidedly superior to any others for our climate, unless the guinea grass, from further experience, should excel them.

From some of my experiments, the product of the *sweet potato*, was much increased from not cutting the seed, the result, however, was not always so, altho' the quantity of vines for planting, and their earlier fitness for that important part of our potato husbandry, was decidedly evident in every comparative experiment I have made; and to insure a greater quantity of vines for early planting of slips, I can, with confidence, recommmend to those who make this valuable root a part of their crop, to plant a part of their field with large seed, and not to cut the potato.

Some attention appears necessary to the proper *time to plant our crops*. We are compelled to wait late in the spring to avoid the frost with our cotton; with regard to our corn, as this is not injured, if it be cut down once or twice in the spring, most farmers in our district, commence their first planting the first week in March. *I* have made the best crops from fields planted the last week in February and first week in March. Some benefit follows the practice of dividing the crop, so as not to have too much, in the same state of maturity. The advantages of laying by our crops as soon as they will admit, would seem to have a decided advantage over late planting, from the very great probability, that in our climate the sooner we can stop the exposure of the soil, to the influence of the sun, by a cessation of cultivation, and shading the same by the growth of corn and peas, less injury must be sustained by the land, than if the same weight of crop was one or two months in its later cultivation. With the different winter grains (oats excepted) I have found the early part of the fall, the best time for planting—that grain, I prefer sowing the first week in January. Although I fear I shall trespass too much upon your patience, I must add a few remarks upon the important subject of a proper *selection of seed*.

Most of us carefully pick out the best corn for planting. But few attend to any thing like a proper selection of our *cotton seed*. Many of us reserve the first pickings for seed, which appears a good practice; but I know of none who select their seed from such *stalks*, as all of us notice every year to produce the most pods, with the fewest leaves and superfluous branches. This subject is more worthy our attention than we are aware of. Practial as well as theoretical writers, dwell much on the great and beneficial changes produced from a due attention to selecting the best seeds from each crop; and perhaps, it will not be hazarding too much, to calculate upon producing nearly the same important advantages, by a strict attention to this branch of agriculture, as have been so visable in the improvement of every kind of stock, by a selection of the best of each species.

The different kinds of *fruit trees* appear well adapted to the soil of our district; and with due attention, every farmer would have good orchards.

Native and foreign *grapes* answer well, and there can be no doubt, if any one well acquainted with the most approved method of producing wine from the different species of the grape, would turn his attention to this subject, much domestic wine of a good quality, could readily be obtained. The late Doctor Fortunatus Bryan, of our district, is said to have made some wine of a good flavour* from our grapes.

To bring our orchards to early maturity, to obtain better fruit, and to continue them productive a longer period; it seems to be a well confirmed opinion that being kept in a state of cultivation is more conducive to these ends, than any other plan yet attempted. The following experiment with peach trees has so important a connexion with this part of our subject, as well as agriculture generally, as to be well worthy the attention of all of us. It is from General Armstrong's treatise on agriculture, which contains much interesting matter, and has been republished in the American Farmer; an agricultural journal of our Country of such acknowledged utility, as I trust will ensure to it such patronage, as will enable its Editor, to continue his useful exertions. M. Chalumeau planted "four peach trees resembling each other

* This would seem to be a suitable occasion to introduce a letter from General Calvin Jones, on the *Scuppernong Grape*; we shall therefore insert it at the close of this address. It was placed in our hands in the summer of 1820, by Mr. Jefferson, at whose table *Millet* was seen by us for the first time, in any shape. It was understood to have long been with him a standing and favourite dish—and the preparation of it to be such as is practised in cooking hominy, but without the addition of beans—and being accustomed, from earliest recollection to pay respect, almost reverential, to his tenets and recommendations in other affairs, we were easily tempted to taste his millet, but—"thinks I to myself," this may be very palatable to *Philosophers*—to a Socrates, or a Jefferson—but rather dry for *common folks*!!

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as to size and vigor of growth, as nearly as possible. No. 1, in a hole three feet square, Nos. 2, in a hole two feet square, and No. 3 and 4, in holes eighteen inches square; the soil and exposition similar. No. 1, has every year produced the most abundant crops, and the relative sizes of the trees now are as follows. No. 1, eighteen feet high, and eight inches in circumference. No. 2, nine feet high, and five and a half inches in circumference. No. 3. six feet three inches high, eight lines in circumference: and No. 4, five and a half feet high, and three inches in circumference" The decided advantages of a proper preparation of our fields for all vegetable productions, are so evident from this, and many other equally conclusive facts, as to require no comment for its application to our crops generally.

A proper *rotation of crops*, is an object of much importance. We should often change the produce of our fields, from a grain, to a root crop; and I have never failed in a crop of corn, that followed cotton.

With respect to the *cultivation of grass*, few attempts have been made. I fear the clovers will not answer with us, though my trial, as yet, will not justify a conclusion against them. From a few experiments with the cocks foot, or orchard grass, and the chickory; I conclude that the former, is well adapted to all kinds of stock; and the latter, principally for sheep, appears to suit our climate. and neither of them are much affected with our winters, which greatly enhances their value. The late season has afforded a successful proof that the guinea grass is well calculated for our summers. It grew very luxuriantly, was planted on the 7th of May, and perfected some of its seed by the 10th of September. This grass is said to yield the most green food: and, after having cut off nearly all the seed, a part of mine planted on five feet beds, was cut on the 18th of October, and yielded at that cutting, the enormous quantity, of 87,120. lbs. per acre; more than 38 tons at one cutting The transplanted grass perfected its seed ten days later, and this, as well as another piece, planted flush, and much clover, appeared to be far less productive.

From so small a portion of our district being in a state of cultivation, it affords many advantages for the *raising of stock:* with a little attention, hogs are raised more than sufficient for our own consumption; and also cattle. The latter only, require some aid in the winter months. Sheep answer well in our pine lands. and when we reflect, that a considerable portion of the clothing of our population consists of domestic fabricks, the improvement of our stock by the merino breed appears well worthy the attention of the society. Having, nine or ten years ago, procured a pair of this breed, they seem to fatten easier than the common sheep; and the wool very superior in quality, and quantity: what must enhance their value much, their wool does not fall off; and this marked distinction from the common breed, shows itself even with the 3-8ths of the blood. My breed of sheep having lately been further improved by a ram of this blood, presented me by a relative, (William Bellinger, of Lemmon, Island.) It will afford me pleasure to extend their breed more than I have hitherto done, by an exchange for other stock, on any terms most agreeable to those, who may wish to improve their wool with this breed of sheep. I have now some excellent cloth made with wool, sent to New Port, Rhode Island, five years since; it proved sound, and of good quality. Our stock would be especially improved by obtaining males of better breeds. But few of us are sufficiently aware of the very great changes which can be effected on all of our stock, by devoting to them much greater attention, than I fear any of us are in the habit of doing.

Most of us fully appreciate the benefit to be obtained from *collecting all the manure* from the stable, and cowpens; and do not neglect to aid our fields with all the cotton seed, which can be spared for this valuable purpose. Some diversity of opinion exists as to the most beneficial mode of applying this seed to our corn whether it should be in a fresh state, or after it had been deprived of the power of vegetation; and I do not know of any conclusive experiment to decide the case. If the expences attending the transportation of lime, salt, and the plaster of paris, were even not considerable, I should not incur them, for so far as my experiments go, neither of them, appear to have produced any beneficial effects upon corn, or cotton; and therefore the heavy charges attending their use, added to their original cost, it does appear to me will not, here, be restored to our farmers. In low situations, if lime could be procured at a moderate expense, I should calculate upon its efficacy, in rendering such lands. sooner fit for cultivation. It appears that a greater difference exists between swamp. and pond mud, than we should expect to find. The former in every case I have tried, produces beneficial effects, while the latter generally injures the young corn, and often totally destroys the stalk, though applied in small quantities. We must not, however decide prematurely in regard to the effects of all manures, since it appears from the experiments of a celebrated chymist, "that the times in which manures begin to produce their effects, and the length of time for which they operate, are proportioned to the degrees of putrefaction, under which they are applied.".

Decomposed tree leaves, or vegetable mould' appear to be so fitted for every purpose of improving the soil of our fields, that I am inclined to the opinion, that, if the trash, and top soil. of our low wood-lands, were applied to our high grounds, and the same parts of our high lands, to our low situations, much benefit must follow the change of soil, and the necessity of many drains be superseded. Agricultural writers suppose fresh cowpened land to be injurious to a crop of barley, and I cannot account for a total failure, of half an acre of that grain which was planted the last season, upon well prepared, highly cowpened, and well cultivated land, unless that cause, together with the rainy winter, and spring, produced such injurious effects. Much diversity of opinion prevails with practical farmers in regard to burning trash, &c. off our fields. Upon high lands generally, I prefer restoring them to the earth, but upon low lands, and such as have too much vegetable matter in its top soil; burning does appear to render them sooner fit for the cultivation of crops. If in burning, 90 per cent. is lost, and we do not obtain any thing that we did not possess at first, how will theorists account for the destruction of almost every plant, the first season of cultivation where a log heap was burned? since, if many log heaps were suffered to rot in the field, in the same spot, vegetation would be benefitted by their mixing with the soil. It would therefore appear that occasional burning of the trash, would, from the small portion of salt, uniformly united to the soil, produce important changes beneficial to the nourishment of plants. Turning in growing vegetables to improve the soil, has been practised since the days of ancient Rome; and though some difference of opinion exists among writers upon the proper time to restore the vegetables to the earth, most of them agree that this process, either in a green, or dry state, much enriches the land. From the little experience I have had, I should avoid both extremes; and neither turn in the vegetables in too young a state, nor wait till too much of their juices were lost, especially in our warm climate; and hence I have endeavoured to restore the cornstalks to the soil as early as possible after harvest, and if possible before frost. In connection with this plan, I have for three years preserved the cobs, and added them to the stalks before they are listed in, and apparently, with considerable effect. as they contain much alkali; which in small quantities is known to add to the fertility of most soils. Various vegetables have been selected, as they appeared to suit the climate; thus, in England, and many parts of our country, the clover is generally resorted to.

The Lupin and the buckwheat, are preferred in Spain and France, and from some attention to this subject, our cotton seed, sowed broad-cast, would answer a good purpose. In conjunction with this plan, the enclosing system, so much extolled by the author of Arator, (colonel Taylor, of Virginia) cannot be too much attended to—the great object is carefully to exclude all stock, and in the fall, before frost, to turn in all the produce of the soil.

Generally speaking, few of us plough our fields to a sufficient depth—yet, I should not approve of a deep culture, after the ground has been well broke up. Since the days of *Jethro Tull*, the father of the drill husbandry, the great effects from well broken lands, in encreasing the beneficial influence derived from the atmosphere—in lessening the fatal effects of great drougths, and too much rain, are generally acceded to by all practical and theoretical writers on agriculture—but I regret to add, too many have adopted his doctrines, without giving this first of farmers, that credit, which he so justly merits, for the many important truths contained in his agricultural writings. I shall cite only one of his sentiments, which fully illustrates his opinion upon this subject. "Till a field in lands—make, alternately, one land very fine by frequent deep loughings, and let another be rough by insufficient tillage,—then

plough the whole field cross ways, in the dryest weather, which has continued long, and you will perceive by the colour of the earth, that every fine land will be turned up moist, but every rough land will be dry as powder from top to bottom." General Beatson, (former governor of that Island, which in future history, will be celebrated as the premature grave of Napoleon Bonaparte,) is an exception to those writers, who have adopted Tull's doctrines, without paying to his memory, that tribute so much due, and those acquainted with his writings will be struck with a coincidence of sentiments between authors, who have written at the interval of nearly 100 years. It is only necessary to state, relative to Beatson's system of cultivation, that the Philadelphia Agricultural Society (of which the venerable Peters is a distinguished member,) has warmly recommended it to their agricultural brethren.

The shovel plough, appears to be well adapted to our state of agriculture, and I have for some years made much use, for the many purposes of farming, of this kind of plough, so altered as to throw the earth both sides—for tracking out our fields, the first ploughing of young corn, and the early culture of winter grain, and rice upon high land, this plough appears to answer many valuable purposes—it also breaks up the earth well, without leaving the field in large clods, especially in clay lands. —In unison with many of our farmers, I have made use of small ploughs, for some years in preference to large ones: and I am confirmed in this practice, by the perusal of some writers on this subject. A shovel plough, six inches wide, appears to answer all the purposes of a large one, and with less exertion to the animal to effect the desired end. I have no doubt, as we proceed to place our fields in a proper state to derive all the advantages in the saving of time and labour, which the various forms of the plough and harrow admit of; that many important advantages will follow their use; and I anticipate much useful information, connected with this highly necessary part of agriculture, from the successful exertions of our respected Vice President, (the Rev. Darling Peeples) who has for some time, paid much attention to this subject.

The writers in our country, as well as in Europe, assure us that we do not derive the advantages from the *use of Oxen*, which they appear fully capable of affording us. In the lower districts of our state, they appear fully to appreciate the value of their labour in heavy draffts. With those of us, who have attempted to use them, they appear fully calculated to answer the many purposes upon our farms, to which, we almost exclusively apply, the more expensive, though nobler animal, the horse. The *mule* must not be neglected—they require less care and provision than the horse, and are well adapted to perform *all* the labors of our farms

Experimental agriculture, is not only an interesting occupation to the farmer, but most of the great improvements, made in this Art, have, as in others, been the result of well conducted experiments. Since, however, the experiments of one season, are often opposed by those of another, we should not hastily decide upon their results; for premature conclusions, often produce injurious effects. I hope we shall unite, as to the propriety of devoting our funds generally, to exciting an agricultural emulation amongst us; since it appears, as far as I can view the subject, that unless a spirit of competition be kept up among ourselves, so as to excite the attention of the farmers of our district, by the production of great crops from an increased attention to their culture, our Society will not answer one of the principal objects of its formation. A few well selected books upon agriculture, would certainly be an acquisition to our Society—and permit me to recommend to your notice, in addition to the American Farmer, the Monthly Magazine for the Southern Climate of the United States: surely the planters and farmers of South Carolina, will not suffer this attempt in our own state to fail, for want of that patronage, which from the first number, this work appears well entitled to. I have thus, gentlemen, in a hasty manner, noticed *some* of the subjects, apparently of most interest to us. If, however, we are in earnest to improve the state of the agriculture of our district, every member must act, as if the fate of the Society, depended upon his individual exertions. The zeal and spirit of inquiry, that existed among us at our organization, flatters me that our endeavours to increase the products of our soil, and to awaken in our neighbours, a sense of its importance, will not disappoint the expectations of our agricultural bretiren, in the various sections of our happy country, who must view with some interest and satisfaction, our attempt to unite with them in their laudable exertions. Not only our interest urges us to increase the fertility of our lands; but, as the advancement of the interest of our state generally, should induce every citizen to prove himself an useful member of society, consequently, he is only discharging a part of his duty to his country, while he at the same time benefits himself.

JOHN S. BELLINGER.

October 19, 1821.

Scuppernong Grape.

RALEIGH, June 17, 1817.

My Dear Sir—I have not time now to give you as full an account of the Scuppernong Grape, as I intended when I promised it to you some time ago, as it would be necessary to consult the files of the Star. Should, what my recollection is able to furnish, be insufficient to answer the purposes of your friends, I will take another opportunity of supplying what may be deficient.

The vine, the leaf & the grape resemble very exactly, what is usually called here the Fox, Bullet, or Muscadine grape, except that it is of a white colour—but I suspect this difference, as well as the peculiar flavour of the juice, is owing more to soil, climate and cultivation, than to any peculiarity of species. Indeed the seeds of this grape, produce indifferent vines, affording grapes of both colors —but the dark coloured grape, yielding an acid and astringent wine, resembling port somewhat, but Hock, more, is not thought worth preserving. The cuttings of the vines, always produce grapes of the colour of the parent stock, but if the seeds are employed to produce a vineyard, the first year of their growth, shows the variety, the tendrils which shoot out from the joints, being of the same colour with the grape that it is to produce, and those which are red or black, may be destroyed as worthless.

I am told that Governor Lane's and Capt. Phipp's Report to Sir Walter Raleigh, published in Haklyt's collection, speaks of this grape as growing on Roanoke Island, when the Colony first landed there. I am disposed to think the grape Indigenous, and I suspect too, that when cultivated in the interior of the country, in elevated situations, and in a rich clay soil, the wine will be greatly inferior to that which we obtain from Roanoke Island and Scuppernong.

In the wine countries of France, as Arthur Young and others tell us, the quality of the wine depends much more on the soil and situation, than on the species of the grape. Cultivation will improve the quality of any grape, and I suppose it is owing to this, that Teneriffe, once a very indifferent wine, has now become little inferior to that of Madeira.

This grape & wine, had the name of Scuppernong, given to them by Henderson & myself, in compliment to Jos. Blount, of Scuppernong, who first diffused a general knowledge of it in several well written communications in our paper—and it is cultivated with more success on that river, than in any other part of the state, perhaps, except the Island of Roanoke.

The seeds should be planted about three inches deep in the earth, at any time during the autumn or winter. I think Mr. Blount gave Feb. the preference as to time. The cuttings should have three joints—two should be buried in the ground and one left above it. I was at Roanoke Island, in March or April—Saw many vines, but never the grapes. There was great uniformity in the manner of raising them there. Their buildings also, had considerable uniformity. Usually the dwelling house was two rooms in length, and only one story high. The kitchen was usually about 50 or 60 feet in the rear of this. About mid way, between the two houses, the grape vine was planted—this rose and spread upon a scaffold, that extended from the eves of one house to the other, and of the width of the buildings, affording at the same time a very agreeable shade, and an annual product of a hundred gallons of excellent wine I was told that a vine in eight years after it was planted, would cover a scaffold of these dimensions, and yield eighty gallons of juice. The vines are never trimmed, and it is not known whether the grape would be improved by such a process. Mr. Garnier, near Wilmington, whom I visited three years ago, and who had then just planted a great many vines, told me, that in France, vines were always trimmed every year, leaving only two, or at most three and sometimes only one new joint—that if suffered to extend themselves, the grapes would degenerate in size and flavour; but he doubted whether, under our warm sun, this

pruning was necessary. At Roanoke, when the grapes became ripe, a sail was spread upon the ground under the vines, which were shaken by applying a forked stick to them—of course the ripe grapes only fell. This was repeated daily, or as often as the grapes became sufficiently ripe. The green and the diseased grapes were gleaned out, and the remainder mashed by some operation, that bruised the skin much, without breaking the seeds. Treading with the bare feet, was thought the best mode. The juice was then pressed out and completely filtered, and one-sixth and sometimes one-fifth of its quantity of proof spirit was added. Sometimes the spirit was not added until the fermentation had made some progress.

The addition of any quantity of water or of sugar but served to spoil it. When there were cellars, (which was seldom the case) less spirit was necessary, and the deeper the cellar the better. I suppose that depth where the temperature would be always the same would be best; and I have no doubt Wier's Cave would make an admirable wine cellar. A few persons who have the advantage of both bottles and a cellar, bottle it as soon as the fermentation commences, and add no spirit. I drank some wine made in this way lately, at Judge Taylor's, which was light, clear, and very pleasant. It was three years old, and was made by Mr. Pittigrew at Lake Phelphs. I understand this wine resembles very exactly the Constantia wine made at the Cape of Good Hope and is said to be not at all inferiour to it; though we have had much of the Scuppernong wine, *so called in Raleigh*, we have had but few fair samples. The reputation which it suddenly obtained here in consequence of our newspaper publications, occasioned a great deal to be manufactured of honey and other ingredients that has injured the character of Scuppernong wine. But some that I have drank here, and all that I ever drank at Roanoke Island, I think not inferior to London, particular Teneriffe. That which has brandy in it, I should have compared to the Sicily wine which it now resembles. Cape wine I never tasted. The soil of Roanoke Island is sand and loam—a kind of warm soil that we should call good cotton land. The natural growth of wood of the Island is pine and chinquopin, (dwarf chesnut) and there is much myrtle and jessamine. There are many of the Scuppernong grape vines, growing in and about Raleigh but I have no doubt, even, if the grapes flourish, that the wine will bear a comparison with that made at Roanoke and Scuppernong. It is a misfortune attending the character of this wine, that age has never yet done it justice. It is generally drank new, and yet no wine improves more by keeping.

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I am dear sir,
Yours, &c. &c.
CALVIN JONES.

To

COL. HUTHINS G. BURTON,
Halifax, N. C.

French brandy is said to be the best spirit to be used in making Scuppernong wine. I start to-morrow for Columbia, where I shall be absent three or four weeks. Is the trampling about the foot of the vine, as they are planted at Roanoke, between the house and kitchen advantageous to the grapes? I suspect it is, though I never heard it mentioned. Here cherries will not do well upon a tree that stands in the loose cultivated soil of a garden but are fairer, and adhere better if the tree is planted in the walks.

On the Value of, and Different Modes of preparing, Burnt Earth for Manure.

[From Essays on Practical Husbandry, by EDWARD BURROUGHS, Esq. Essay Second. On Manures and their Application.]

This substance being but little known as a manure, and being highly valuable on most soils, merits the particular attention of the cultivator: it has also this particular recommendation, that there are but few farms on which it cannot be prepared, and can be obtained at a cheaper rate than most other manures.

By the term "burned earth," is to be understood, any species of soil that is capable of being torrefied or dried up by excessive heat, preserving at the same time, its original staple after that operation. Clays of all sorts, and strong loams, will answer well for this purpose; but moors and sandy soils, being deficient in tenacity, will not torrefy to advantage, as I shall, in its proper place, explain. It is necessary to observe, that this mode of preparing earth as a manure, is upon a principle very different from that of reducing it to ashes; and though the effect produced on the land on which it is applied may be apparently the same, yet the torrefied substance is by far a more permanent manure.

The chemical difference in the preparation is this:—In reducing the soil to ashes, much of its fertilizing properties are dissipated, and its vegetable matter destroyed; but, when torrefied, those properties are preserved, and its vegetable matter only reduced to a state more valuable as the food of plants. There are two sorts of burned earth; *1st*, That which is produced from the subsoil; and *2dly*, That which is produced from the surface, or upper soil. I shall treat of them severally, in order to show how they are to be appropriately applied, and to point out the best mode of preparing them under different circumstances.

First.—Subsoil calculated for this purpose may be said to be of two kinds, viz. adhesive clay, and calcareous earth; the former seldom possesses any fertilizing properties in its natural state; but the latter is generally a valuable substance, even in this state. As alteratives to the soil, they may be good applications if appropriately applied, and may produce fertility accordingly; but, by putting them through a process of torrefaction, however naturally deficient in fertilizing properties, they can be converted into valuable manures. Hence it would appear, that the most fertile subsoil would be the most advantageous to torrefy, and this I have no doubt, is the case; but then, as the process will make any description of soil a valuable manure, the only object is, to procure that which will answer best for this purpose.

The most simple and the cheapest method of preparing this manure, is, to excavate a place in the pit out of which the subsoil is to be raised for this purpose, and in this place to build the kiln. The subsoil will then be convenient to throw on the kiln; and the culm for assisting in the burning of it may also be laid down convenient, as it is wanted. The kiln is built in the following manner, viz

An arch of about four or five feet long, three wide, and two high, is made with well burned brick; the front of which is close like an oven, and the inside fitted to receive a strong fire of coals. On the top of the arch six or eight holes are left, the size of a small brick, to admit the heat passing out, which is to communicate to the earth laid on. When the fire is sufficiently strong, the door of the kiln is to be well stopped, and the earth thrown on in some degree pulverized, about six or 8 inches thick, so as to cover the top of the kiln, and every direction around it to which the heat might communicate. In this manner it is to be dressed alternately with culm and earth, which are to be laid on accordingly to the heat of the fire, which is on no account to be permitted to burn too strong.

After the kiln is once well lighted, it will burn several hundred bushels of earth without any additional fire inside; and the same kiln will answer for a length of time to renew the process when it may be necessary.

The substance which I saw put through this process on the lands of Doveridge, was a yellow clay of a strong nature, and liable to become calcined by excessive heat, which Lord Waterpark found to be the case on his first commencing his experiments. However, on reducing the strength of the fire in the kiln, and not giving so heavy a dressing of culm between the layers of clay, the heat was just sufficient to produce torrefaction; and when the clay was carted out, it was in a mellow and pulverized state.

This was applied, in the month of April, on a field that had produced barley the year before, and the soil of which was nearly similar to the subsoil applied on it. The result was, that a most excellent crop of barley was obtained by this dressing, even better than on another part of the same field which had been limed in a sufficient quantity, and treated in the same manner.*

Subsoil may also be torrefied in kilns made of sods, or mud and straw, as follows; viz. On a headland, or waste piece of land, off which sods can be had sufficiently old to build walls, erect four parallel to each other, and forming a square of eight feet in the clear; let these be well joined at the angles by crossing the sods, and raised about four feet high at the commencement, and twenty inches thick. Through the centre of the four walls, and on a level with the surface, cut flues, so that they will all meet in the centre of the kiln, about five or six inches deep, and four wide, which are to be covered by sods on the top, leaving intervals between them of less than an inch. These flues are to be kept free of clay or rubbish, and the mouths well open to the air.

In the centre of the kiln place brushwood, turf, or other combustible matter; also, some small blocks of wood to strengthen the fire; and, when all is well kindled, throw on some culm and then clay, and so on, as you find the fire sufficiently strong to take dressing; always observing to keep the heat of the kiln as even and as moderate as possible, just of sufficient strength to expel the moisture from the layers of clay as they are thrown on. Much care should, however, be taken not to cover the fire too soon after being lighted, which would be likely to extinguish it totally.

The reason of raising the walls at the commencement only four feet, is, that the firing may be more readily placed in it; but, during the burning, they should be always kept eighteen inches higher than the centre of the kiln, in order that the wind should not have power on the surface of the fire. As soon as the kiln is strongly kindled, two flues should be stopped observing always to keep those open which face as much as possible the windward point: should the kiln burn too strong, one of those will be sufficient to leave open. It will often happen that the kilns will burn to a height of eight or nine feet; but it is of no advantage to let them burn higher than seven feet, as the inconvenience of dressing them, when so elevated, adds too much to the expense.

When kilns are well managed, one of the size I have described would be burned in about six weeks, at the end of which time the walls would be so torrefied as to become of equal value, as manure, with the interior of the kiln; however, it cannot be expected that they will be in a state sufficiently pulverized to

*Communications from Lord Waterpark, Doveridge.

put out the same time for a crop: it would, therefore, be advisable to have them broken down as soon as the kiln has burned out, and to mix and blend altogether About two months after this preparation, it will be in good order to put out for a green crop; but, for a corn crop, it should be in the highest state of pulverization. Calcareous earth is considered to be, by some scientific farmers, the best substance for burning, on the principle that the calcareous matter which it contains is reduced to lime in the process of torrefaction; therefore, lime being, in their opinion, the best burned substance which can be produced, the manure the most replete with it must be the most valuable. Now, there are two matters to be ascertained before this theory can be admitted:—1*st*, Is lime a greater fertilizer of soils in general than torrefied earth?—and 2*dly*, Whether, in the process of burning any subsoil which has a large portion of calcareous earth, the effect which should be produced by torrefaction would be counteracted if there were sufficient fire applied to reduce the calcareous particles to lime?

First. Lime being established as a valuable application on many soils, it would be no easy matter to persuade those who have not tried burned earth as a substitute, that it possesses more fertilizing properties; but then experience, by which all must be governed, has convinced me, that this latter substance is by far more valuable, on many soils, than lime. I have tried it on strong clays, on light soils, and on moory soils, on all of which it produced good crops of potatoes and turnips, and afterwards corn; and, in one instance in particular, where lime had been applied ineffectually, a dressing of burned clay made the land yield most abundantly Lime only stimulates and pulverizes the soil; whereas burned earth not only possessess those properties, but contains in itself enriching and vegetative qualities. The following experiments will serve to corroborate these asserions.

On a wheat stubble (the soil a light sandy loam) which I had gravelled as a preparation for that crop, I sowed barley in the following spring, the land being winter fallowed, and in good tilth; part of the field I dressed with burned clay, and part with lime and clay in compost. The crop was sown, and treated on both parts equally alike; but the portion of the field on which the burned earth was applied, produced by far the best quality of grain, and also a greater quantity to the acre.

On a moory field, which I prepared for a potato crop, I applied a heavy dressing of strong clay and lime compost, (not considering the land sufficiently strong to take *pure* lime with advantage;) part of the field remained undressed until May, for want of stuff to lay on, and, it being late in the season, my farm yard dung was all consumed I therefore, had no alternative but to prepare some burned earth, by digging the head-lands, which was laid on the remainder of the field about the 20th of May, and potatoes planted The result was most encouraging; the crop on this part of the field being better than where the lime and clay had been applied.

I shall now proceed to show the mode of preparing the surface, or upper soil, so as to produce valuable manure. Headlands round tillage fields are the principal source from which to obtain earth for this purpose; and let its nature be what it may, provided it adheres when dug with the spade, it can be torrefied in a kiln made of sods, in the manner I have already described; but, then, the principle on which these sods are burned being different from that of preparing subsoil for this purpose, it is necessary to state the process minutely.

If the kilns be made of sods, they may be immediately lightened on being finished; but if of mud and straw, they should be permitted to dry before it is applied. Any labouring man, in the habit of building huts with sods or otherwise, can prepare a kiln without difficulty; and as it is not necessary that neatness should be observed, five or six men could erect one in a day. The walls, however, when made of sods, should be beat close with the spade, in order to prevent them from drawing air, by which the burning of the kiln would be much retarded. The successful burning of these kilns chiefly depends on the judicious manner in which the kindling is placed in them, and the sods laid on the fire; for they are not to be dressed with any combustible matter alternately, as is the case when the subsoil is burning. The entire operation is performed by the heat from the fire in the body of the kiln passing through the interstices of the sods, and which are formed by laying them loosely and openly on the top of each other. It is, therefore, advisable, that the sods used for the purpose of dressing the kiln, should he cut as square and lumpy as possible, and of a size that they can be readily handled, so as to lay them on the kiln carefully:—loose earth should not be thrown in on any account.

The best materials for lighting the kilns are, turf and coarse timber; but where those cannot be procured, any kind of brushwood and coals may be substituted with effect; but the fire should be made stronger in those kilns than when subsoil is to be burned. It will be necessary to lay on the sods very expeditiously on the fire being properly kindled; otherwise the combustible materials would be exhausted before a sufficient quantity of the sods was heated: and on this chiefly depends the successful burning of the kiln. For this reason, it would be necessary to light them early in the day, that they may be well covered before sun-set. In dressing them, the sods should be laid close to the walls; and the centre kept a little elevated; and those points where the fire breaks out strongest should be heavily covered, as the kiln would be exhausted by permitting the smoke to pass too rapidly away.

It is evident that, after the kindling is burned out, nothing remains but its effect, which is simply that of heating the sods immediately near it, and retaining a great body of heat in a confined space. By the heat being thus smothered, no reduction of the innate properties of the soil can take place, nor any of its grasses dissipated; neither is it much reduced in quantity; it is merely dried up, or torrefied, by the process, and made more capable of imbibing, when blended with the natural soil, those properties of the atmosphere conducive to vegetation.

Having stated the principle on which earth prepared in the foregoing manner is converted into manure, I shall make such general observations on the subject as may elucidate the matter more satisfactorily to the practical farmer, and to convince him that it is not formed on casual experiment originating in fancy, but founded on a system that has for many years existed, but which has only been lately brought to scientific perfection.

In the northern countries in Ireland, the burning of earth was very general; and this practice is supposed to have originated from a want of manure, flax being a great exhauster of the soil, and not producing any vegetable substance which would ultimately benefit it after yielding that crop. I understand, from several intelligent persons who have seen this manure applied on different farms, that it made the most inferior soil produce good crops of potatoes, corn, and flax; but as I have not been an eye witness of their mode of preparing it, I must be satisfied to state the result of the experience which I have had for some years both as to its preparation, and in applying it on different soils.

I have already observed, that no part of a farm is so well calculated for this practice as headlands:—1*st*, From the soil being deeper on them than on other parts of the field; and, 2*dly*, From the benefit which the land will receive by cutting away such rising headlands, and giving it a gradual slope to the dykes or water-cuts. If such headlands can be found convenient to fallow lands, there will, consequently, be much expense saved in carting out the manure; and even the brows or backs of ditches could be converted to this purpose without injury to the fences, and, in many instances, would effect a general benefit But should any of those resources for supplying sods fail, or that no subsoil calculated for burning can be found on the lands, the surface of grass lands which have a good depth of strong soil, may be advantageously devoted to this purpose.

It may be said, in objection to this practice, that the injury a piece of grass land so stripped would suffer, would be much more than any benefit that the manure produced from it could possibly be, for that the land so stripped could never be beneficial afterwards in any way whatever. I shall, therefore, state some experiments which I made on this point, and leave the reader to judge of the ultimate results.

First.—I stripped about twenty perches of grass land; the upper soil a loamy sand, the subsoil a poor yellow clay, very weak and friable. The upper soil was about twelve inches deep, and near ten inches of this was cut away in sods for kilns and burning; so that not more than two inches of the surface soil was left after the manure produced was carted away. The twenty perches were then ploughed, and manured with a well prepared compost heap, and a light dressing of the burned earth which it had produced, ploughed once, and then planted with potatoes: the crop proved of good quality and productive. The second year it was planted with potatoes in like manner, and produced as well as the adjoining part of the field off which the sward had not been carried.

Second.—I practised this the following year on a similar piece of land; and the result was equally encouraging, indeed more so; for the potatoes were better where the sward was taken off, than in the adjacent part of the field which was ploughed out of the ley, and manured in the same manner.

I do not, however, mean to assert, that there are not lands which, by such practices, are not in some degree deteriorated; but certainly the deterioration they suffer is not so serious as is generally supposed; and I have no doubt, was the land so treated to be well cultivated and manured for three years successively, that it would be effectually restored to its primitive state. Now, when we recollect the quantity of valuable manure which is obtained from so small a surface, surely it cannot be considered as bad management to create a temporary injury, (if such it should be,) to obtain a permanent and extensive benefit.

Off the twenty perches, as already stated, I had as much manure as dressed two acres abundantly for potatoes, and which, the following year produced better wheat than was obtained off similar soil by the application of the farm-yard dung. I also tried it for turnips the same year, and never had a more even or a better crop Suppose then the staple of the twenty perches to have been reduced; query, can it not be brought to a sufficient depth by a few deep ploughings and judicious manuring, the expense of which would be but trifling on so small a surface?

It is well ascertained, that soil of any description can be made fertile by exposure to the atmosphere: and the appearance of soil brought up by deep ploughing, should never deter the cultivator from trying his skill in this way. Every day's experience shows us, that land which has been dug two spits deep becomes more fertile afterwards, although the good soil, as it is termed, is turned down, and the subsoil brought up: this should evidently convince us, that much is yet to be learned in the science of promoting vegetation.

I shall now make some observations on the value of this manure in general, and show its great advantage as a means of extending profitable cultivation, and of promoting the comforts of the small farmer and cotter.

The number of acres which are fallowed throughout Great Britain and Ireland, in consequence of the want of manure, causes a serious reduction in land produce for the consumption of the population of those countries; and this evil must increase progressively as tillage is extended, unless a sufficient means of renovating those lands under cultivation increase in the same proportion. The system so generally practised in Ireland, of stimulating the soil by an application of lime, and giving it rest by occasionally fallowing, has been, at length, found to be unprofitable, and a practice which ultimately, on light soils especially, reduces them to barrenness When lands are reduced to this state, it is no easy matter to treat them judiciously; for although they may produce light crops of some artificial grasses suited to their condition, yet the returns from these must be very deficient, and

must, consequently, be a drawback from the general profit of a farm. The discovery, therefore, of a cheap valuable manure, must be considered as a matter most essential to the interest of agriculture; and that which is the most easily obtained, and the most efficacious, must be considered as the most beneficial.

The expense of burning clay in the kiln here described, is from threepence to fourpence an Irish load, or about forty or fifty shillings an Irish acre; and as there are but few farms on which some sort of earth fit for this purpose cannot be procured, it may be safely said, that it is within the reach of every farmer to obtain. It is, however, necessary to state, that when the sods off light soils are burned, the manure produced is not calculated to apply on similar soils, but should be put out on tenacious clays, moors, or other soils dissimilar to that prepared for this purpose. But strong clay put through this process becomes excellent manure for soils of the same sort, its property is totally altered by torrefaction. Thus it will be more advantageous to obtain the strong soil, if possible for preparing this kind of manure.

I have found crops to be much benefitted by mixing peat mould with burned earth produced from light soil, in the proportion of one-third of the former, and two-thirds of the latter substance, especially should it be necessary to apply it afterwards on sandy soils. I tried an experiment on two acres of land last year to ascertain this fully:—one acre was planted with potatoes, with the burned earth unmixed with any other substance; the other had the peat and earth; and the result proved the superiority of the two substances blended. The peat mould was dug through the earth as soon as the kilns were fit to break down, and left in this state for two months; the heap was then turned, at which time the peat was highly fermented from the heat of the ashes and burned earth. I conceived that the vegetable matter contained in the peat, and its tendency to retain moisture, acted as an alterative on the soil to which it was applied, and which, being a rabbit sand, was deficient of vegetable matter, and incapable of retaining moisture.

Burned earth may be depended on as a manure fit to produce abundant turnip crops of every description, on a variety of soils; even the Swedes, so difficult to grow on light soils, will prove a more luxuriant crop with this manure, than with *farm yard* dung, and are less liable to be cut off by the fly. For those crops, however, it should be well prepared by breaking down the kilns as soon as they are sufficiently burned, and by pulverizing the sods, and mixing the ashes through them; and this should be repeated a third or fourth time if necessary.

It may be supposed by some, that any crop sown on this manure would be precarious in a dry season, not containing, as they may conceive, any enriching quality or properties to preserve moisture. But this is by no means the case; for it will be found, that an application of torrefied earth makes the land on which it is applied more capable of absorbing moisture from the atmosphere, and, by minutely dividing the soil, the roots of plants can search more freely for nourishment.* I have often observed, that farm-yard dung, unless very well prepared, does not, in excessive dry seasons, supply sufficient moisture to the roots of plants; and that, during such seasons, crops sown on ashes or burned earth, have uniformly thriven, while those in dunged land have gradually declined. I state this to show more clearly the wonderful property of all burned and torrefied substances in absorbing the food of plants from the atmosphere, and afterwards preserving these for the benefit of their vegetation.

It is a common practice among farmers, both in England and Ireland, to dig headlands, old ditches, and other waste places, and to collect them for manure, by adding some dung or lime through them. This is attended with heavy expense 1*st*, From the quantity of dung or lime necessary to make the heap profitable; and, 2*dly*, From the double carting which must take place on which it is to be applied. Now, after all this expense, the manure obtained is of a very inferior quality to what could be produced by putting the earth through the simple process which I have already described; and one load of it would be more valuable than double the quantity would be in its raw state. Thus a saving of one-half the cost, in carting alone, would be effected, one load of burned clay being equal to two loads of such compost, besides having the dung or lime to appropriate to other purposes.

It may sometimes happen, that the place off which sods can be obtained is so much detached, that it would be attened with too much expense, and, perhaps, great inconvenience, collecting them for a large kiln; in this case, large heaps of the sods may be made and torrefied in the following manner; viz.

Let four flues be cut on the surface of the land, convenient to where the greater part of the sods can be collected, about eight inches deep, and six wide, and covered, as before directed, with strong sods. The firing is then to be placed on the centre, where the four flues meet, which must be stronger, in proportion, than what would be necessary for a *close* kiln, as the burning of the sods in this manner will entirely depend on the strength of the fire, and the judicious manner in which the sods are placed on the heaps. The kindling should be perfectly covered with sods before it is lighted, and then piled heavily as soon as it is well kindled, but observing to cover those places first from which the smoke issues the strongest. Two of the flues should be stopped as before directed; and when the heap ceases burning, which is generally the case in four or five days, it should be covered well with the surrounding soil, and left so for some weeks before it is broken down or turned.

Sods burned in this manner do not produce such good manure as in a regular kiln; neither does a certain quantity of firing prove so productive in those round heaps, as it does in kilns; it is, therefore, only, necessity that should cause the adoption of this mode instead of the regular kiln. By this it will appear, that, by the erection of the walls, the heat is retained effectually, and will often continue for six or eight weeks after they have done burning; whereas, in the round heaps the air having the full power on the surface, the internal heat is soon checked; besides, the walls ultimately become manure, and the expense of erecting them is but trifling.

Burned earth is an excellent manure for garden seeds, especially when applied on rich soils which have been often dunged, or inclined to weeds: it does not engender slugs or worms, and is, therefore, well calculated for such plants as are liable to be cut off by those insects.

On the whole, it must be considered as a most valuable addition to the farmer's means of cultivation and improvement; and I am satisfied, that it only requires to be known to entitle it to this character.

*"It is well known that burned clay, after being reduced to powder, will not again coalesce, so as to be formed into a brick, unless it has been treated with the acids. The powder of burned clay lies always in that happy medium between cohesion and repulsion of the particles, which, as has been already observed, is best adapted to divide the particles of water, and give admission to the roots of vegetables. I have long remarked with surprise, the wonderful power of fertility which this substance, discovers whether in a body by itself, or mixed with raw earths."—*Naismyth's Elements of Agriculture*, p. 340.

Massachusetts AGRICULTURAL SOCIETY

OFFICIAL REPORT.

The Committee on Agricultural Experiments submit for the consideration of the Board, the following, in addition to their Report dated the 11th of October last, to wit:

That Payson Williams, Esq. of Fitchburg, in the county of Worcester, is entitled to the Society's premium of twenty dollars, for having raised the greatest quantity of Potatoes, being five hundred and fifty one and a half bushels, on one acre of land. Mr. Williams has been a successful competitor for some of the premiums offered by the Trustees, three years in succession, which must be attributed to his skill in husbandry, and to the excellent management of his agricultural concerns. In his communication to the Committee, he states, that "he planted 24 bushels of potatoes, 3 of which were the Irish Apple, so called, imported from Liverpool, last winter, 3 the Fitchburg Whites, and the remainder the Rio de La Plata Reds. The relative yield between the European, American, and South American, resulted in favour of the reds of La Plata; yet in quality, for the table especially, the Irish are far superior to either, and ripen four weeks earlier than the other kinds." The entire expense of cultivating this acre of land in potatoes, including the value of the manure, was eighty-four dollars and ninety-eight cents. Mr Williams also claims the premium of thirty dollars, for having raised the greatest quantity of Spring Wheat, on one acre. The Committee, however, did not consider him to be entitled to said premium, the quantity raised not exceeding a medium crop for Massachusetts. In his letter to the Committee, he says, "The extreme drought of the season will account for a crop of no more than twenty bushels and twelve quarts of wheat from the acre."

That Messrs. Tristram, and Henry Little, of Newbury, in the County of Essex, are entitled to the Society's premium of thirty dollars, for having raised the greatest quantity of Indian Corn, being one hundred and five bushels and six quarts of sound corn, on one acre. In their statement they say, "The seed was the eight rowed yellow corn, selected in the field, from the most fruitful, thrifty stalks of the preceding crop, four or five kernels put into each hill—the hills were four feet by three feet apart: it was hoed three times, and the vacant hills filled up the first and second hoeing by transplanting from those that had four or five stalks, calculating to have three stalks in each hill."—The entire expense of cultivating the acre, including the cost of the manure, was thirty-nine dollars. Messrs. T. and H. Little are also entitled to the premium of twenty dollars for having raised the greatest quantity of common English Turnips, on one acre, being seven hundred and fifty-one bushels, "completely trimmed, fit for the market—about two hundred bushels have been sold, some of them were sold by the ton, and have been weighed, and we find that they weigh fifty-four pounds to the bushel. The land was ploughed with a horse, and a double mould board plough, in ridges three feet apart—one row was sowed on each ridge, with a machine, which took one pound of seed, and a hand roller was made to pass over each ridge, which completed the sowing, which was on the fourth of July. When they were out of the way of the fly, they were thinned, to the distance of one foot apart, on the ridges; they were twice ploughed and hoed: about the last of October they were harvested." The entire expense of cultivating the acre, including sixteen dollars, the cost of nine cords of manure, was thirty-two dollars and thirty-three cents.

That John Prince, Esq. of Roxbury, in the County of Norfolk, is entitled to the Society's premium of twenty dollars, for having raised the greatest quantity of Mangel-Wurtzel, being six hundred and forty-four bushels, on one acre. Mr. P. states to the Committee as follows: "The soil is a rich light loam, on a hard, gravelly bottom, on a hill descending to the south, having sixty apple trees in the above space, averaging fifteen feet high, which obliged me to have the rows directly up and down hill. The heavy rains washed and very much injured the crop;—could the rows have been across, I doubt not one third more at least of roots would have been gained. The entire expense of cultivating the acre, including 46 dollars for twenty-three loads of compost manure, was sixty-nine dollars and seventy-five cents, being 10¾ cents per bushel, of fifty-six pounds weight; besides a large quantity of thinnings during the season, and also of leaves at the time of harvesting. Having succeeded perfectly in preserving my roots in the ground last winter, as published in the Repository, No. 3, vol 6. I have this year deposited, in precisely the same manner, most of the above crop, and also about four hundred and fifty bushels of Ruta Baga." Mr. Prince is

also entitled to the premium of twenty dollars, for having raised the greatest quantity of Flax, being at the rate of six hundred and nine pounds to the acre. "Having the grounds previously ploughed and harrowed, with Bennett's broad cast sowing machine, I sowed clover, herds grass, and red top seeds, on three quarters of an acre and thirty-seven rods, which were deeply harrowed in, and then one bushel and a half of the best cleaned flax seed I could procure, was sown on the land, with the same machine, and very lightly harrowed and rolled. This method was adopted, that the roots of the grass might be deeper than the flax, so as not to be disturbed in pulling the flax. So few weeds made their appearance, that no attention was paid to them. On the 20th of May, finding the worm was attacking the flax, I spread on one half dry ashes, and on the other half, plaster of paris, which had the desired effect of checking them Nothing further was done till the flax was pulled, on the 27th and 28th of July. Eleven bushels of seed, of an excellent quality, cleansed by Hotchkiss's new machine, were produced, notwithstanding the yellow birds had taken a large share. The soil is a rich, deep loam, on a gravelly bottom, and has six y seven apple and pear trees, from 10 to 20 feet high, growing on it, which produced much shade, and of course must have injured the crop." A specimen of the flax, which is of a very good quality, well cleaned, and prepared for spinning, accompanies this report.

That E. Hersey Derby Esq. of Salem, in the County of Essex, is entitled to the Society's premium of twenty dollars, for having raised the greatest quantity of Cabbages, being forty-three tons, nineteen hundred and ten pounds weight, on one acre.

Mr Derby is also entitled to the premium of thirty dollars, for having raised the greatest quantity of Vegetables, (grain, peas and beans excepted) for winter consumption, of the stock on his own farm. It will be seen by the certificates produced by Mr. Derby, and which accompany this report, that he raised the last season on his farm, 749 bushels of Mangel Wurtzel, 530 bushels of Carrots, 526 bushels of Swedish Turnips, 1288 bushels of Potatoes, 126 bushels of Russian Radishes, 757 bushels of common English Turnips, 43 tons and 19 hundred weight of Cabbages, and 15 ox-cart loads of Pumpkins.

That Mr. David Little, of Newbury, in the County of Essex, is entitled to the Society's premium of twenty dollars, for having raised the greatest quantity of Ruta Baga, being six hundred and 88 bushels, on one acre. "The seed was sowed on the 12th and 13th of June, one row on each ridge, which took 3-4ths of a pound of seed, and covered with a light harrow, drawn by a horse, lengthways of the rows. July 5th, commenced ploughing between the rows, hoed and thinned them to the distance of about 10 or 12 inches. They were twice hoed and ploughed; the 8th day of November commenced harvesting;—six men and four bour boys pulled and trimmed off the tops fit for market, in five hours; they were then measured—the product was six hundred and 88 bushels." The entire expense of cultivating the acre, including the cost of four cords of manure, was twenty-three dollars and seventy-nine cents Mr. Little also raised five hundred and thirty bushels of common Beets on one acre.

That Mr William Mears, of Marblehead, is entitled to the Society's premium of twenty dollars, for having raised the greatest quantity of white Beans; being thirty-two bushels and four quarts, on one acre.

That Thomas Shepherd of Northampton, in the County of Hampshire, claimed the Society's premium of thirty dollars, for making the most satisfactory experiment to ascertain the best mode of raising Indian Corn; having raised sixty one bushels and twelve quarts of corn, and one hundred sixty bushels of ruta baga, on one acre. In his letter to the Committee, Mr. Shepherd makes the following statement:—"The acre was sowed in alternate rows of corn, and ruta baga, the corn rows being 8 feet apart. The whole field of nearly 20 acres, except the acre that produced 87 bushels and 24-32, was sowed in rows 8 feet apart; and the half acre, which yielded 61 bushels and 12 quarts was not better than a fair average of the field. It is my belief, that 75 bushels of corn, and 3 or 400 bushels of ruta baga, (or 2 or 300 bushels of potatoes) can be raised on one acre of good rich ground, cultivated in this way; but the corn must be sowed very thick in rows, 8 feet apart, and the ditch well filled with fine mellow earth, and plenty of manure; nor is it an expensive mode of culture, considering the great crop to be obtained The cross ploughing and furrowing is extra work; but this it is, with the aid of the harrow, that makes the great crop, if sowed in wide rows, as my experiment this year proves, having got at the rate of 142 bushels and 24-32 to the acre, in this way; and in the narrow rows, with more exhaustion of the land, only 87 and 24-32 bushels"—Your Committee have not awarded to Mr. Shepherd the premium claimed by him. The width of the rows, as recommended, favors unquestionably very much the growth of the corn; and the crop, taking into the calculation the ground actually occupied by it, was certainly very great; still your Committee are not convinced that Mr. Shepherd is entitled to the premium for making the most satisfactory experiment for ascertaining the best mode of raising Indian corn. Much praise is due to Mr. Shepherd, for the extensive and correct manner in which he has, for several years past, cultivated one of the finest farms in New-England. Mr. Shepherd also claims the Society's premium of thirty dollars, for introducing a grass superior to any before cultivated in this state, which your Committee would most gladly award to him, could they, after due consideration, believe him to be entitled to it; but from their own observation, and the best information they have been able to obtain, they entertain doubts if the clover supposed by him to be altogether a new one, be such"—"The stalk," says Mr. Shepherd, in his letter to the Committee, "is very small, and when ready to cut for hay, the whole field looks like a cherry tree fully ripe It never lodges; and nothing can exceed the beauty of the field when in full blossom; it is short and does not yield, the first cutting, so great a burthen as the common clover, but in a season much more; it will remain in the ground, and yield a crop the third year, but perhaps it seeds itself partly—it will do two years. Being satisfied that the second crop would give seed before the frost set in, I have this year made the second trial, with the most complete success. having obtained from the rowen clover nearly two hundred pounds of seed to the acre" It is understood by your Committe to be the general practice with the farmers in the states of Connecticut, New Hampshire, and some parts of Massachusetts, to procure their seed from the second crop of red clover. In Pennsylvania, says Dr. Mease, in his Domestic Encyclopedia, the Pratense, or common red clover, annually produces three or four crops for two years at least; the seed is collected both from the first and second crop, but principally from the former. Mr. Eliot wrote his Treatise on Husbandry, a work held in high reputation by all agriculturists, more than seventy years ago; he says, land in good heart will bear two crops of clover in a season, and recommends saving the second crop for seed.

Claims for premiums were also exhibited to your committee by Thomas Shepherd, Esq for having raised eighty seven bushels and 3-4ths of a bushel of Indian Corn, on one acre. Colonel Samuel Wright, of Westford, in the County of Middlesex, for having raised seventy-eight bushels and five quarts of Indian Corn, on one acre. Mr John Dwinell, of Salem, for having raised five hundred and twenty bushels of Carrots on one acre; and on the like quantity of land, five hundred and eighteen and a half bushels of Potatoes.—And John Prince, Esq. for having raised the greatest quantity of Vegetables, (grain, peas & beans excepted,) for winter consumption of the Stock on his own farm.

For raising the greatest quantity of parsnips, common beets, onions and dry peas—for proving by actual experiment, the best season, and mode of laying down lands to the grass whether Spring, Summer, or Fall seeding be preferable, and with or without grain, on different soils—for soiling cattle—for turning in green crops as a manure—for the greatest quantity of good honey, and superior skill in the management of bees for the best mode of rearing, feeding, and fattening neat cattle—for the best superfine flour, manufactured in the state of Massachusetts, from wheat raised in this State—no claims for premiums were made; these several objects are of great importance to the Agriculturists of this Commonwealth, and deserve, and the Committee hope will have their attention, in the coming year.

By order of the Committee,

THOS. L. WINTHROP, *Chairman.*

Boston, Dec. 22, 1821.

PREMIUM CROPS—BRIGHTON, MASSACHUSETTS.

Persons.	Residence.	Premium. Dollars.	Crops.	Acres.	Seed or Plants. Bu.	Dist. Plants.	Yield. Tons.	Bu.	lbs.	Loads.	Manure. Corns.	Loads.	Bush.	Culture. No. of Times Hoed.	Ploughed.	Total Cost Dolls.
Payson Williams	Worcester Co.	20	Potatoes	1	27	4 by 3 3/8=10890		550*						3		84
T. & H. Little	Essex	30	Corn	1	—	4 by 3 3/8=10890		105						2		39
do.	do	20	Turnips	1	1 lb	3 by 1 X 1=14520		7	14						2	12
John Prince	Norfolk	20	M'gel Wortzel.	1				644§		609	9	28	16 ,46			69
do.	do.	20	Flax { Fibre / Seed	1	1½											
								43 19/20		11						
E. H. Derby	Essex	20	Cabbage	1				43 19/20	—	3976—	15					
do.	do.	30	Vegetables¶					688	‖							
David Little	do.	20	Ruta Baga	1				32			4			2	2	23
William Mears	do.	20	White Beans	1												

* Mr. Payson also made 20 bushels Spring Wheat on an acre. — † Of 54 lbs.—§ Of 56 pounds—this crop grew in an orchard.—¶ The greatest quantity for farm use.—‖ Harvested in 50 hours work.—also raised on one acre 530 bushels common Beet.